NANOSTRUCTURED TITANIUM OXIDE (TIO2) FILMS PRODUCED ON MICRO-ROUGHENED COMMERCIALLY PURE TITANIUM BY ANODIC OXIDATION WITH DIFFERENT VOLTAGES

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ABSTRACT

Titanium (Ti) and its alloys have been used for dental implants due to their excellent biological compatibility, superior mechanical strength and high corrosion resistance. The nanometer-sized roughness and the chemistry have a key role in the interactions of surfaces with proteins and cells. In this study, commercially pure titanium (cp-Ti) discs were treated by sandblasting and then anodizing. The formation of titanium oxide (TiO2) nanoporous on sandblasted titanium substrates was investigated in the electrolytes containing fluoride by electrochemical method. Anodizing was carried out at the constant cell potential ranging from 20 to 60 V at the temperature of 25◦C. The nanostructured TiO2 coatings was characterized using, scanning electron microscopy (SEM), X-ray diffraction (XRD) and X-ray photoelectron spectroscopy (XPS). Sandblasting/anodizing significantly improved the hydrophilicity of Ti.